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ABSTRACT

There is increasing evidence that information system development and personnel development within an institution must not only be parallel in sophistication and noncontradictory in design, but also that concurrently developing programs are mutually supportive and increase the effectiveness of each far beyond the capability of either. Management information system (MIS) design, implementation, report format, and use have become much more manager-oriented. Its purpose and uses are described, and various personal attitudes and skills related to the use of MIS are identified, including: (1) capability to manage "operations" efficiently and effectively; (2) provision of a comprehensive picture of the institution; (3) development of an awareness and a sense of availability regarding details within each institutional unit; (4) stimulation of an increased sense of the relationship between institutional units; (5) stimulation and facilitation of goal-oriented management; (6) encouragement and facilitation of multiyear management; and (7) stimulation and facilitation of vertical and horizontal communication. (LBH)

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THE CHICKEN OR THE EGG:

The Interdependence of Information Systems and Personnel Development

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There is increasing evidence that information system development and personnel development within an institution must not only be parallel in sophistication and non-contradictory in design, but also that concurrently developing programs are mutually supportive and increase the effectiveness of each far beyond the capability of either.

Introduction

It was only a few years ago that administrative skill in the use of information systems in postsecondary education was likened to an animal's paw, while management information systems publicized at that time required highly trained and dexterous fingers. Since that time, there have been three very important trends:

(1) Management information system design, implementation, report format, and use have become much more manager oriented. The initial models developed by economists, computer specialists, and management theorists have evolved into much more usable tools. Perceived suitability of a management information system (MIS) is critical for a potential user. It should stretch the user's conceptual and operational abilities; but if it is beyond his or her level of development, it will not find a place in institutional operations.

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(2) A second trend in the last few years has been a new concern for personnel development. The AAHE/CASC conference on the evaluation and development of administrators in higher education is but one evidence of this. Limited activities of the past have included a few university departments of higher education, spasmodic activity of regional laboratories, and the distinguished work of specialized higher education associations such as NACUBO (National Association of College and University Business Officers). A good illustration of a new comprehensive and careful approach is the new Exxon-funded HEMI (Higher Education Management Institute) in Cocoanut Grove, Florida.

(3) Recent projects of The Council for the Advancement of Small Colleges (CASC) (e.g., Institutional Research and Planning Project, Small College Consortium, and the National Research and Management Project) have focused on the need to integrate each of the above into a program of concurrent development--MIS and personnel. The key, of course, is not only that the breadth and depth of the system be designed to match individual and institutional levels of sophistication at the time of initial implementation, but that it also has the capability to evolve concurrently with the developing skills of personnel who must interact with it. That dynamic interaction appears to have a tremendous potential for both personnel and information system development--as well as stimulating institutional vitality. The results of the CASC projects have been gratifying, and this paper is an attempt to describe some of our experiences and conclusions.

What Is A Management Information System?

Before we can talk about the relationship of management information systems to personnel development, it is necessary to define what is meant by

an "MIS." The term has been used to cover an amazingly diverse collection of activities, computer programs, books, services, and simulation models. There is usually some legitimacy related to the particular usage, but it almost always carries with it a limited perspective of the author or user and sometimes reflects a "tunnel vision" specialty focus of a computer specialist, economist, accountant, marketing specialist, registrar, fund raiser, or traditional administrator. I am going to try to present here a brief explanation of what I think is a broad, yet practical, conceptual and operational use of the term. It is on the basis of this concept of a comprehensive MIS that dynamic applications can be made to personnel development.

(1) Management - The term "management" is finding increasing acceptance in postsecondary education. It may be, however, that acceptance is occurring most slowly in the areas and levels of the most critical need--the policy-making levels of traditional institutions.

Perhaps the term "management" as used in this paper is best defined by comparing it with traditional attitudes about "administration" in higher education. It seems to me that the critical difference between "administration" and "management" is whether the prevalent leadership attitude toward the institution is that (a) it is going to be "administered," in the sense of assuming that the various aspects of the endeavor will remain unchanged and that status quo is expected, or (b) activities will be "managed," in the sense of paying more attention to the analysis of activities and their costs and productivity, projecting and considering alternatives, and developing strategies for necessary change. A management

approach is not so much a set of particular tools, models, services, and programs, but rather a basic attitude of the personnel that are involved.

It may be something like riding a horse: one can either merely sit astride the saddle and hold on tight so as not to fall off; or the rider can rest lightly on the animal and feel its motion, strength, and responsiveness and try by various foot, knee and hand pressures through the reins, whip, or direct contact to give direction to horse and rider so that their motion can be brought to the best possible use.

A rider is acting like a manager when he is aware of the environment through which he and his steed are moving, has a specific objective in mind and an idea of how long it will take to get there, knows of checkpoints en route, has some sense of the resources necessary, and, if it is a long trip, will have made preparations for the resources to be available.

A management attitude means that one is interested in analyzing past activities, especially when they reveal internal and external trends and tendencies to waste resources. The manager will also be interested in projecting, over several years, the implications of current activities, trends, costs, and policy decisions. If extrapolations of current trends appear, for some reason, to be dysfunctional, then the manager will want to consider alternatives.

A good manager will also give attention to the process of institutional change, as well as the basic information that must be looked at. (The purpose of this paper is not to examine "process

systems"--and this is an even less-refined art than information systems--but there is increasing evidence that it is also an important area that needs more research and development.)

After changes have been implemented, the manager will want to carefully evaluate the situation again so as to ascertain whether or not it is an improvement and to consider the implication of the change on other parts of the institution. This, in turn, re-initiates the analysis and projective activities mentioned earlier and precipitates what becomes an on-going cycle of dynamic institutional and personnel development.

In colleges and universities, this management attitude is most effective when it permeates the institution but is critical at the levels of the president, dean, and academic and service department heads. This analytic and projective attitude can be directed toward programs, services, personnel profiles, fiscal resources, staffing resources, student resources, institution-wide and departmental resource allocation patterns, constituency definition and clarification, and environmental analysis. The administrative attitude that basically assumes that most of these areas will remain essentially unchanged stifles both individual and institutional development.

(2) Information - If a person has the responsibility for an institution, or some aspect of it, and elects to function in the mode that I have defined as "management," he or she will then have to determine what "information" is needed for analysis, projection, and assessment of productivity. For instance, a person will want

to assess the costs and productivity of various programs and services. The contribution of individual personnel to departmental and institutional costs and achievements will also have to be looked at so that appropriate reward structure decisions can be made. Statistical displays of resource expenditure patterns are also vital, so that a manager can know where and how people, dollars, and facilities are being used. Environmental assessments will also be helpful to determine both the availability of resources (inputs) and suitability of products (outputs).

The manager will further want the information displayed over a multi-year period so as to display trends as well as single time frame snapshots. A manager will also want some information displayed in a format that compares productivity to costs according to specific programs and services.

Some information needs of a manager will be related to daily operations and others will only be necessary at occasional periods in the annual management cycle of the organization.

Other information needs of a manager will not be statistical but rather descriptive, perceptual and tonal. Illustrations of these might include evidence of goal consensus, samples of institutional climate, and student attitudes toward teachers and services.

Any, or all, of these types of information can be part of a comprehensive MIS. The information profile and format will reflect the concerns, needs, and attitudes of the institution and its staff.

(3) System - Another important facet of the attitude of a "manager" is a sense of the institution being a living, changing, organism

made up of a set of dynamic units or functions. It cannot be understood by looking at any one part or activity. It also cannot be understood by analyzing all of the parts separately, but only when one realizes the dynamic interaction between various units and functions. The whole is indeed greater than the sum of its parts. A manager with a systems approach will also be sensitive to movement and change, both planned and unplanned, the implications of those changes, and the projection of them over the several units within a given environment and over an extended time period.

A manager will also have a goal orientation and will be asking: What is the purpose of the institution and the contribution of each activity unit? How productive is it (are they), and what resources had to be expended to achieve what degree of progress?

The manager will not find answers to all the questions that he or she might raise regarding efficient and effective progress toward objectives, but there will probably be a gradual development of improved hard and soft information if the right questions are being asked. The flow of information will become increasingly suited to the style and tempo of the institution and its personnel. Concentrations of detailed information necessary to one era or stage of development can be produced and then adjusted and expanded as priorities change and new needs come to light. As general institutional and unit personnel develop, new reporting formats will also be necessary--sometimes new, intricate detail for indepth analysis, and at other times broader aggregations and systems-wide analyses for breadth of perception. New valuable daily operational data will be developed that will suggest, over time, new conceptual and operational approaches to analysis and

projections. Some analyses will precipitate new programs and services which, in turn, will require new techniques and formats to be incorporated into the MIS.

The MIS, therefore, is a living, dynamic organism in and of itself. Some have likened it to the nervous system of the human body, sensing the activities, contacts and achievements of each of its several parts; and concurrently, in a never-ending cyclical fashion, it is also communicating to its various members the functions that should be taking place--the purpose of the system being the preservation of the whole and the parts, and the facilitation of both individual unit and total organism objectives.

New techniques are constantly becoming available that permit a college or university to develop its "nervous system." The key to the usefulness and effectiveness of the system is the concurrent development of personnel whose attitudes and skills are matched to institutional needs and system capabilities. The personnel, in addition, will benefit by interacting with the transactional, analytic, and projective information transmitted through the nervous system that, itself, is ever-changing to reflect progression of both the institution and the individuals within it.

Personnel Attitudes And Skills Related To The Use Of An MIS

(1) Capability to manage "operations" efficiently and effectively.

Many of the basic techniques of information systems have grown, originally, out of basic techniques for collecting, maintaining, and using data to manage daily transactions. Illustrations of this on college and university campuses include such things as the registrar's office, payroll and accounting systems, and a host of other very practical applications. A good subsystem of this type and level is a valuable thing.

This basic use of organized information provides an excellent illustration of the concurrent development of informational capability and personnel skills. Several national associations have done an excellent job of training people in the use of information of this sort. The most outstanding of these is NACUBO. The principle, of course, is to give people tools that help them to not only do their job better but to also develop personally in the performance of their responsibility. The thesis of this paper is that the concept and application of an MIS at both this and higher levels will stimulate and facilitate personnel development. An MIS, as defined in this paper, provides for personnel development beyond the levels of efficient and effective management of everyday transactions. The following points suggest other attitudes and skills that may be even more important in the long run.

(2) Provides a comprehensive picture of the institution.

The outline or structure of a comprehensive MIS is an outline of each and every unit of the institution and its function, cost, personnel, and productivity. The vehicle is not important. Data might be entirely available on computer printouts or perhaps only in paper-and-pencil or in a printed Factbook. In most institutions information is transmitted through a combination of several of these mechanisms.

A comprehensive information system might also include some "soft" information such as a summary profile of institutional goals, climate or governance, or succinctly descriptive prose and scenarios.

There is an important sense in which the information available in an institution reflects the developmental level of the institutional personnel. The very fact that information is not available tells us something. If it

is not used as a primary basis of communication between individuals and units and interrlated with other unit data in an analytic and projected mode, it is apparent that very little in the way of "management" has taken place, or ever will.

(3) Develop an awareness and a sense of availability regarding details within each institutional unit.

It would be an error to focus only on the broad conceptual concerns of management and ignore the tremendous value that an MIS can provide a manager who desires to use a magnifying glass on a particular activity or function in order to understand it in depth.

Frequently, an institution faces a particular problem in one area and special attention must be focused on it. The last few years a very detailed analysis in colleges and universities has been given to such things as developing comparative unit costs of instructional programs, and managing and analyzing such things as student recruitment, student attrition, and fund raising.

(4) Stimulates an increased sense of the relationship between institutional units.

It has been a tendency on traditional campuses to isolate many of the functions and activities. This is frequently evident in the methods of data collection and use. An illustration is the separate files with identical information on students that are usually maintained in the admissions office, dean's office, student personnel office, placement office, and one or more academic departments. An information capability that is designed to reflect the concept of a "system" will not only reduce this ridiculous redundancy, serve the student better, save money, and make the job easier for campus

personnel, but it can also graphically show, by its structural design and information flow charts, the relationships among the various functions, units, departments, and activities.

The development of an attitude that the institution is a true system--a living organism--tends to develop personnel who not only better understand the importance of fulfilling their responsibility but who also understand the roles and responsibilities of others, thus encouraging a sense of community.

The student recruitment personnel frequently have information regarding student needs and desires that can be valuable to the curriculum committee. The people responsible for student retention should be comparing their information with that of the admissions personnel. The financial aid office should be talking with the student recruitment people. The upper level personnel--the president and the deans--can gain an overview of the relationships so as to encourage and strengthen the sometimes subtle but critical interactions that are vital to overall institutional vitality.

(5) Stimulates and facilitates goal-oriented management.

There are a few people and institutions that get into management information systems because they already know precisely where they want to go and they want to use this new technology to get there in the most efficient and effective manner. The majority of college administrators and managers, however, tend to implement some information system techniques because they have heard about other people using them or because they think it might help them fulfill some specialized aspect of their responsibility. Frequently we have watched them develop, as they become familiar with the techn'ques, by interacting with new and constantly evolving segments of an MIS. New pieces of the big picture come into focus which in turn precipitate the development

of new information needs, which then in turn promote new questions, broader and deeper personnel capabilities, and then, in turn, precipitate new information needs and capabilities--and so on in an ascending spiral.

Sooner or later, however, people begin to ask more than how, what, and how much, and they want to know why. Cost analysis no longer satisfies their level of concern because they now have to develop the capabilities to deal with cost/benefit analysis. The focus of the questioning changes from efficiency (using the least possible resources) to effectiveness (getting wherever one is going in the best possible manner). Managers, at both the general institutional and departmental levels, are brought face-to-face with questions of purpose, for their institution and/or department(s).

A healthy developmental response to this question is the design and implementation of a planning process system and a hard and soft information base from and through which the entire educational community can come to grips with goals and objectives. It can help give new meaning and vitality to the institutional organism, the information system, the functions and productivity of individual departments, as well as the personal and professional lives of the personnel.

The measurement of "productivity" or progress in the attainment of departmental and institutional goals is sometimes a very difficult thing--especially in education. On the other hand, there is a lot of evidence which indicates that the methodology currently available is far in excess of that which is in use. Some measurement capabilities are available, but even mere verbal descriptions tend to produce greater focus and therefore achievement. When combined with other management skills, good orientation can be a great boon to institutional vitality and personnel performance.

(6) Encourages and facilitates multi-year management.

It is only a "baby step" to shift most information system techniques into the projective mode. Skills, attitudes, and personnel capable of interacting with an information system on a daily basis are easily directed into thinking about future implications of current behavior. There is a very fine line (if indeed there is any at all) between management in the multi-year mode and good "planning." So many of our everyday decisions and even one-year projections in such things as annual budgets, have massive implications for long-range institutional viability that we never see because they have not been projected over at least a three to five-year period.

There is a sense in which this is the highest use of information system capability. The appropriate amount of detail is aggregated in suitable structures that reflect the total institutional departmental and aggregate functions. A sense of unit interaction and goal orientation is brought to bear, at one time, on what might be called long-range planning. Traditional administrative tendencies to permit and encourage incrementalism or, at best, ad hoc fragmented growth, are converted to integrated, longitudinal projections of options and the selection of the best possibilities. This should all be done with the expectation of future assessment and re-thinking and with repeated feedback loops for reality tests and adjustments.

(7) Stimulates and facilitates vertical and horizontal communication.

The frequently heard on-campus complaint, "we're not communicating with each other around here," is probably not a correctable phenomenon in and of itself. It is probably a symptom of structural, information, and process entropy at the individual, departmental, and institutional levels with regard to the first six points in this list. Concepts of operational efficiency can

vary widely. Perceptions of institutional functions and productivity can be limited by departmental blinders. Indepth analysis of everyday activity can be ignored. Relationships between units and departmental and organizational goals, and implications for the future of current programs and policies frequently can be overlooked.

The positive side of each of those points, however, is to encourage each individual and department throughout the institution to begin to think, talk, write, and act as if they were speaking the same language. Common data elements begin to evolve, and an accepted structure for departmental and institution-wide data becomes accepted. Functional reporting and communication formats between departments and the aggregate reports to upper levels are developed. Commonly accepted procedures and processes for data use in program and policy assessment and development begin to become established. When this occurs, the nervous system is developed to a point that permits it to not only service the institution and its personnel, but to stimulate further personnel development and, in turn, reflect this development through its depth, breadth, and length of perspective--in an ever-ascending spiral.

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